

Shock Layer Radiation Project

Game Changing Development Program | Space Technology Mission Directorate (STMD)



ANTICIPATED BENEFITS

To NASA funded missions:

Shock layer radiation modeling improvements have directly impacted Osiris-Rex, MPCV, InSight and Mars 2020 missions. In particular, ESM researchers identified and quantified the impact of backshell radiation for these missions for the first time. ESM staff also worked with the MEDLI Post-flight team to quantify the impact of CO2 radiation on returned flight data, showing that this effect could explain much of the difference between computational predictions and returned flight data in the stagnation region. ESM researchers also used data collected in the EAST and subsequent model development to propose the first substantive update to Orion shock layer radiation margin policy since the beginning of the project; these changes were accepted by the Program and included in the updated aerothermal database for EM-1. ESM and MPCV partnered on the analysis of radiation data returned from EFT-1 flight radiometer.

DETAILED DESCRIPTION

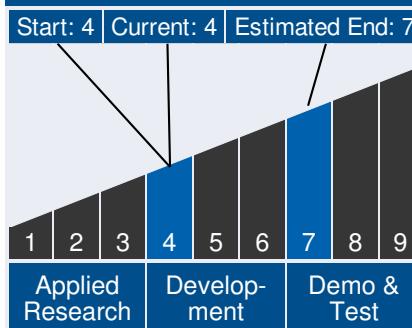
A Gap Analysis of current and proposed missions indicates a strong need for development of models for high-speed air (Earth return), CO2/N2 (Mars and Venus), and H/He (Outer Planets) atmospheres.



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Technology Maturity



Management Team

Program Executive:

- Lanetra Tate

Program Manager:

- Mary Wusk

Project Manager:

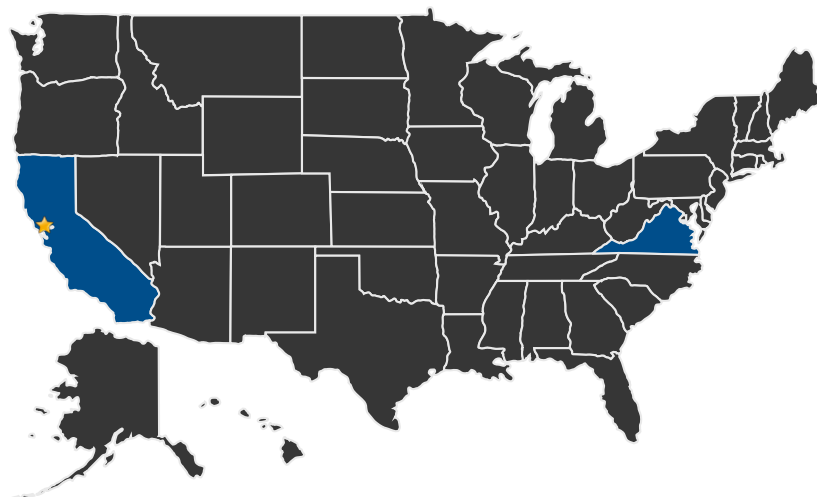
- Michael Wright

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U.S. WORK LOCATIONS AND KEY PARTNERS



■ U.S. States
With Work

★ **Lead Center:**
Ames Research Center

Technology Areas

Primary Technology Area:
Entry, Descent, and Landing
Systems (TA 9)

Other Organizations Performing Work:

- Human Exploration and Operations Mission Directorate
- Science Mission Directorate
- University of Illinois, Urbana-Champaign
- University of Minnesota (Minneapolis, MN)

DETAILS FOR TECHNOLOGY 1